

What is claimed is:

1. A filter device comprising:

a hollow fiber membrane module structured with a multiplicity of hollow fiber membranes bundled at one ends
5 and made free at other ends, and arranged for spread into a broom form within fluid; and

injection means for ejecting the fluid or gas from a radial central position toward a radial outward of said hollow fiber membrane module to apply an agitation thereto.

2. A filter device comprising:

a filter cylinder to be arranged in a certain direction;

a hollow fiber membrane module structured with a multiplicity of hollow fiber membranes bundled at one ends
15 and made free at other ends, and arranged for spread into a broom form within said filter cylinder; and

raw fluidinjection means for ejecting raw fluid a fluid or gas from a radial central position toward a radial
20 outward of said hollow fiber membrane module thereby injecting raw fluidsaid fluid or gas to an interior of said filter cylinder.

3. A filter device according to claim 2, wherein said filter cylinder is arranged vertical in an axial direction.

5 4. A filter device comprising:

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a hollow fiber membrane module structured with a multiplicity of hollow fiber membranes bundled at one ends and made free at other ends, and arranged for spread into a broom form within fluid;

10 injection means for ejecting the fluid or gas from a radial central position toward a radial outward of said hollow fiber membrane module to apply an agitation thereto; and

15 a funnel member, disposed below said hollow fiber membrane module, made in a form narrowed in opening area in a downward direction.

5. A filter device comprising:

20 a filter cylinder to be arranged in a certain direction;

a funnel member made in a form narrowed in opening area in a downward direction and arranged within said filter cylinder, to define an interior of said filter cylinder with a filter chamber on an upper side and a
25 recovery chamber on a lower side;

a hollow fiber membrane module structured with a multiplicity of hollow fiber membranes bundled at one ends and made free at the other ends, and arranged for spread into a broom form within said filter cylinder; and

5 raw fluidinjection means for ejecting raw fluidfluid or gas from a radial central position toward a radial outward of said hollow fiber membrane module thereby injecting the raw fluidsaid fluid or gas to an interior of said filter cylinder.

10 6. A filter device according to claim 5, wherein said filter cylinder is arranged vertical in an axial direction.

15 7. A filter device comprising:

a filter cylinder to be arranged vertical in an axial direction;

20 a funnel member made in a form narrowed in opening area in a downward direction and arranged within said filter cylinder, to define an interior of said filter cylinder with a filter chamber on an upper side and a recovery chamber on a lower side;

a hollow fiber membrane module structured with a multiplicity of hollow fiber membranes bundled at upper

ends and made free at lower ends, and arranged for spread into a broom form within said filter cylinder;

raw fluidinjection means for ejecting raw fluidfluid or gas from a radial central position toward a radial outward of said hollow fiber membrane module thereby injecting the raw fluidfluid or gas to an interior of said filter cylinder; and

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a backwash camber formed on a top surface of said filter cylinder, to temporarily store filtrate fluid permeated through said hollow fiber membrane module and have a fluid pressure to be applied during backwashing.

8. A filter device according to any one of claims 2, 5, and 7 , wherein said filter cylinder has an inner diameter of 1.5 to 3.0 times bundled end diameter of said hollow fiber membrane module.

9. A filter device according to any one of claims 2, 5, and 7, wherein said raw fluidinjection means is structured with an injection pipe penetrating a bottom surface of said filter cylinder and inserted through a lower end opening of said funnel member to structure an upper part inserted in a central position of said hollow fiber membrane module and ejection ports formed in said

injection pipe at a part inserted in said hollow fiber membrane module.

10. A filter device according to claim 9, wherein
5 said ejection ports are arranged between a one-third position from the upper end and a two-third position from the upper end with respect to a longitudinal direction of said hollow fiber membrane module.

10 11. A filter device according to any one of claims 1, 2, 4, 5, and 7, wherein said raw fluidinjection means injects raw fluidfluid and bubbling air.